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<http://mdl.psych.northwestern.edu/index.html>

## **What does your research focus on?**

My research focuses on examining abnormalities in reward-processing and reward-related brain function in mood disorders such as depression and bipolar disorder using multi-modal techniques involving psychosocial indices, neurophysiology (electroencephalography; event-related potentials), and neuroimaging (fMRI). My colleagues and I propose that risk for bipolar disorder involves a hypersensitivity to cues of possible reward which can lead to excessive goal-directed motivation in response to rewarding stimuli (i.e., mania). By contrast, we and others have demonstrated that risk for unipolar depression (with no history of mania) is characterized by a reduced sensitivity to rewarding stimuli.

## **What drew you to this line of research and why is it exciting to you?**

I would say that before I was a scientist, I was a philosopher. I have always had a deep interest in the workings of mind and the nature of human emotion. What drew me to psychological science, however, is the ability to examine these ancient questions using modern methodologies and technology. I was further drawn to the study of depression and bipolar disorder in order to better understand what occurs when normal emotional processes become dysregulated. An overarching goal of my work is to try to help minimize the suffering of individuals struggling with emotional disorders. I feel privileged to have

a career focused on examining one of the great complexities in the universe: the human mind.

### **Who were/are your mentors or scientific influences?**

One of the great joys for me in training as an academic psychologist has been the opportunity to work with truly phenomenal mentors. It was through my work as an undergraduate research assistant in Richard Davidson's Affective Neuroscience Laboratory at the University of Wisconsin–Madison that I was first exposed to the scientific investigation of the mind. During graduate school I had the pleasure of being mentored by Lyn Abramson at the University of Wisconsin–Madison, and working closely with Lauren Alloy at Temple University. Lyn and Lauren have likely had the greatest impact on teaching me to think as a psychological scientist. During my postdoctoral training at the University of Pittsburgh, I had the pleasure of working with Mary Phillips and Ellen Frank, both of whom have had a huge effect on my professional development. I have tremendous gratitude for my academic mentors, as well as my current colleagues at Northwestern University who provide me with wonderful professional counsel.

### **What's your future research agenda?**

There are three future directions to my research on abnormalities in reward-processing in mood disorders. First, I am interested in moving beyond examining the neurobiology of depression and bipolar disorder as homogenous illnesses, and am instead interested in identifying specific psychobiological pathways to specific symptom profiles. Second, I intend to add a self-regulatory perspective to my research by examining whether individuals with a mood disorder have difficulty disengaging from rewarding or emotionally salient stimuli. Lastly, I am interested in examining whether abnormalities in reward-related brain function can serve as biological markers to establish differential risk for mood versus anxiety disorders.

### **What publication are you most proud of?**

Nusslock, R., Almeida, J. R. C., Forbes, E. E., Versace, A., LaBarbara, E. J., Klein, C. R., & Phillips, M. L. (2012). Waiting to win: Elevated striatal and orbitofrontal cortical activity during reward anticipation in euthymic bipolar adults. *Bipolar Disorders*, 14, 249–260.

The publication I am most proud of is a paper that I have with Mary Phillips, my post-doctoral mentor, in which we used fMRI to examine reward-related brain function in individuals with bipolar disorder. This is one of the first studies to demonstrate that individuals with bipolar disorder display a hypersensitivity to rewarding stimuli at the neural level. We propose that this hypersensitivity may be a mechanism for understanding mania among individuals with bipolar disorder. That is, in the face of possible rewards, individuals with bipolar disorder may experience an excessive increase in positive and reward-related emotions which, in the extreme, may be reflected in manic symptoms.